



State of Utah

DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER QUALITY

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DIVISION OF
OIL, GAS & MINING

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September 16, 1993

DOGM
MINERALS PROGRAM
FILE COPY

Mr. Glen Eurick
Environmental Affairs Coordinator
Barrick Mercur Mines, Inc.
P.O. Box 838
Tooele, Utah 84074-0838

RE: Closure Plan Approval
Valley Fill Area No. 1

Dear Mr. Eurick:

We have concluded our review of your proposal for the closure of the Valley Fill Leach Area No. 1 which was originally submitted to us on November 2, 1992. Meetings, phone discussions, and correspondence took place during the review process on February 24, March 5 and 12, April 14, May 17, June 2 and 9, July 7, 21 and 28, and August 25, 1993 to resolve the issues pertinent to the design, construction and monitoring of this facility.

The gold recovery at this facility, using cyanide solution, ceased approximately July 15, 1988, according to the submitted information. The fill has since undergone dewatering of sub-ore, process pool, leakage collection system, and neutralization by flushing with about 1,976,715 gallons of fresh water and 7,630,314 gallons of precipitation water. Samples taken during 1991 and 1992 have shown less than 1 milligram per liter of free, total, and WAD cyanide in the water coming out of the leak collection system.

Based on several discussions, the mutually agreed-upon closure plan for Valley Fill Area No. 11 is as follows:

1. Shape the valley fill to provide a 2:1 surface slope and to fill voids between the sub-ore and the liner perimeter. No leached material shall progress outside the liner perimeter.
2. Install a clay cap on the leached ore with a compacted thickness of 12 inches. The clay cap will have a saturated hydraulic conductivity of 5×10^{-7} centimeter per second or less, as measured using ASTM Method D-5084 (triaxial permeability with back pressure on undisturbed samples extracted with thin wall Shelby tube). The samples for these laboratory tests shall be extracted every 20,000 square feet.

3. The clay cap will be overlain with bulk fill consisting of run-off mine material from dumps or operating pits. It will be used to fill the west, south, and east sides of the dump to meet the existing topography and to shape the existing 1.5:1 north slope to a 2:1 gradient. The fill will reach a maximum height of about 22 feet along the side slopes.
4. All precautionary measures will be taken to protect the integrity of the low permeability clay cap during installation of the bulk fill. Lift placement will proceed from slope bottom to top with no downslope dozing across the underlying clay.
5. A 3-foot layer of sub-soil will be installed on the bulk fill to allow a smooth compacted running surface for placement of future mill feed ore. The sources of sub-soil are from topsoil stripped areas within future mining or dump limits. The subsoil will be compacted by track or wheel rolling. This layer will have a surface slope of two percent.
6. Upon cessation of the use of capped valley fill as a stockpile area, the sub-soil will be scarified at a nominal 24-inch depth on 2-foot centers to accommodate vegetative root penetration, and a layer of 12-inch top soil will be laid on the subsoil with no compactive efforts.
7. An appropriate native seed mix will be applied to the topsoil to promote vegetative growth. Post closure monitoring of the plant growth will continue until adequate plant growth has been attained, is self propagating, and is in accordance with the Utah Division of Oil, Gas, and Mining (DOGM) surety bond release provisions.
8. Lined ditches, as described below, will be established along the west and east sides to allow non-erosional runoff from the south side of the dump to drop points on the north side, which will convey any water into the existing Mercur Canyon drainage below. The surface runoff diversion structures will be sized to accommodate the 100-year, 24-hour storm event. They will be constructed as V ditches, with nominal 2:1 side slopes. There will be a rockfill lining, with particles sized to withstand the expected flow velocities to control erosion. The lining thickness will be dependent on the particle sizing and erosive capacity of the flows. The design will conform to the existing DOGM permit criteria for runoff control and erosion minimization.
9. The operating pregnant solution pumping system, and the leakage collection pumping system will be left in place at least for the duration of the post closure water quality monitoring period, and will not be removed without prior approval of the Division of Water Quality (DWQ).
10. The post closure monitoring of the leak collection system and cistern will continue at least as long as this mine remains operational. This may have to be extended, based on the data gathered during this period. All of Area No. 1 water quality monitoring will conform to existing practices and procedures and monitoring parameters currently being performed as per

existing Groundwater Discharge Permit No. UGW450002 and the Sampling, Handling and Analysis Plan therein, or as further negotiated with the DWQ pursuant to the applicable surface or ground water regulatory programs. All data collected will be submitted to the DWQ within 15 days from the end of each calendar quarter.

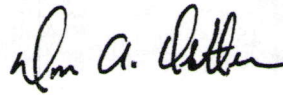
11. The final cover will be monitored by periodic inspections for cap erosion, settlement, animal burrows, drainage ditch conditions, etc. Immediate repairs will be undertaken as necessary, or as directed by the DWQ to return the area to the original post closure conditions.
12. Notwithstanding this closure plan, the facility remains classified as an "Existing Facility" as per R317-6-6.1.B. Based on the quality and quantity of fluids recovered from the production cistern and the leak collection system, or other appropriate considerations, a groundwater discharge permit may be required of Barrick Mercur.
13. This closure shall be considered independent of future closures for Areas 2 and 3. No provisions of this closure plan shall be construed as precedent setting. The future closures shall be based on the regulations in force at the time, and the conditions existing at a particular site.

We understand that Barrick is planning to start installation of the low permeability clay cap after the 1993 expansion of the tailings impoundment is completed.

Please call C.C. Patel or Dennis Frederick of my staff, if you have any questions or need further assistance.

Sincerely,

Utah Water Quality Board



Don A. Ostler, P.E.
Executive Secretary

DAO:ccp:rvg

cc: Wayne Hedberg, Division of Oil, Gas and Mining
Tooele County Health Department
Dennis Frederick, GW Section

N:BARRICK AREA 1 CLOSURE FINAL LETTER
FILE:BARRICK MERCUR